Roy Lake

Site Description

Location
Water designation number (WDN)	48-0033-00
Legal description	T126N-R55W-Sec.20,21,22,27,28,29,31,32,33,34
County (ies)	Marshall
Location from nearest town	2.0 miles south and 1.0 mile west of Lake City, SD

Survey Dates and Sampling Information
Survey dates	July 9-11, 2013 (FN, GN)
	October 1, 2013 (EF-WAE)
Frame net sets (n)	24
Gill net sets (n)	6
Electrofishing-WAE (min)	60

Morphometry (Figure 1)
Watershed area (acres)	9,614
Surface area (acres)	2,054
Maximum depth (ft)	21
Mean depth (ft)	10

Ownership and Public Access
Roy Lake is a meandered lake owned by the State of South Dakota and the fishery is managed by the SDGFP. Three public access sites are present; two are located within the Roy Lake State Park-West Unit (northwest portion of lake) and the other is on the northeastern shore within the Roy Lake State Park-East Unit (Figure 1); all are maintained by the SDGFP. Lands adjacent to the lake are generally under state and private ownership.

Watershed and Land Use
Major land use in the Roy Lake watershed is agricultural, primarily pasture and rangeland (SDDENR 2007).

Water Level Observations
The South Dakota Water Management Board established OHWM is 1795.7 fmsl, and the outlet elevation of Roy Lake is 1795.2 fmsl. On May 22, 2013 the elevation was 1795.3, slightly below the OHWM, and 1.3 ft higher than the fall 2012 elevation of 1794.0 fmsl. The water level had declined to an elevation of 1794.9 fmsl on October 8, 2013.

Fish Management Information
Primary species	Largemouth Bass, Northern Pike, Smallmouth Bass, Walleye, Yellow Perch
Other species	Black Bullhead, Black Crappie, Bluegill, Channel Catfish, Common Carp, Green Sunfish, White Sucker
Lake-specific regulations	Largemouth/Smallmouth Bass: Only those less than 14", or 18" and longer may be taken. Of those no more than one may be 18" or longer.
	Walleye: minimum length 15".
Management classification	warm-water permanent
Fish consumption advisories	none

Figure 1. Contour map depicting access locations and depth contours of Roy Lake, Marshall County, South Dakota.

Figure 2. Map depicting geographic locations of Bullhead, Clear, Cottonwood, Four-Mile, Six-Mile, and Roy Lakes from Lake City, Marshall County, South Dakota (top). Also noted are public access and standardized net locations for Roy Lake (bottom). RYFN= frame net; RYGN= gill net

Management Objectives

1) Maintain a mean spring night electrofishing CPUE of stock-length Largemouth Bass ≥ 10, a PSD of 40-70, and a PSD-P of 10-40.

2) Maintain a mean gill net CPUE of stock-length Northern Pike ≥ 3, a PSD of 30-60, and a PSD-P of 5-10.

3) Maintain a moderate density Smallmouth Bass population with a PSD of 40-70, and a PSD-P of 10-40.

4) Maintain a mean gill net CPUE of stock-length Walleye ≥ 10, a PSD of 30-60, and a PSD-P of 5-10.

5) Maintain a mean gill net CPUE of stock-length Yellow Perch ≥ 30, a PSD of 30-60, and a PSD-P of 5-10.

6) Maintain a mean frame net CPUE of stock-length Black Bullhead ≤ 100.

Results and Discussion

Roy Lake is a permanent, natural lake situated in the Coteau des Prairie. Major surface water inlets flow into Roy Lake from Clear Lake on the east, Cottonwood Lake to the north and Four Mile/Bullhead Lakes to the northwest. Discharge from the surface outlet in the southwest portion of Roy Lake enters Lost Lake before draining into Cattail/Kettle Lakes (SDDENR 2007).

Roy Lake is a popular destination for aquatic recreation primarily boating, swimming, and fishing (SDDENR 2007). A resort, state park, and approximately 140 homes and cabins are located on the northern shoreline of Roy Lake; while the southern shore remains relatively undeveloped. Currently, Roy Lake is managed as a black bass (Largemouth and Smallmouth), Northern Pike, Walleye, and Yellow Perch fishery.

Note: Curlyleaf pondweed is an invasive species present in Roy Lake. Care should be taken by all user groups to prevent the spread of this species to other waterbodies. Information about curlyleaf pondweed and how to prevent the spread of invasive species is available at: http://gfp.sd.gov/wildlife/nuisance/aquatic/default.aspx

Primary Species

Largemouth Bass: Night electrofishing for Largemouth Bass is conducted during the spring of even numbered years. The next scheduled sampling will take place during the spring of 2014.

Northern Pike: Northern Pike relative abundance in Roy Lake has generally been considered moderate to high with mean gill net CPUE values that ranged from 1.5 to 10.3 from 2004-2012 (Table 2). In 2013, the mean gill net CPUE of stock-length Northern Pike was 7.5 (Table 1) and above the minimum objective (> 3 stock-length Northern Pike/net night). Currently, relative abundance is considered high.

Gill net captured Northern Pike ranged in TL from 36 to 68 cm (14.2 to 26.8 in), had a PSD of 51 and PSD-P of 0 (Tables 1, 3; Figure 3). The PSD was within the management objective of 30-60; while the PSD-P was below the management objective of 5-10; Table 3).

No Northern Pike age or growth information was collected. The condition of gill net captured Northern Pike was similar to that of Northern Pike captured from other northeast South Dakota glacial lakes (e.g., Cattail/Kettle and Clear Lakes) with mean Wr values that ranged from 87 to 89 for all length categories (e.g., stock to quality) sampled. Stock-length Northern Pike had a mean Wr of 88 (Table 1) and no length-related trends in condition were apparent.

Smallmouth Bass: Night electrofishing for Smallmouth Bass is conducted during the spring of even numbered years. The next scheduled sampling will take place during the spring of 2014.

Walleye: Since 2004, the relative abundance of stock-length Walleye has remained low to moderate with mean gill net CPUE values that have ranged from 1.8 (2011) to 9.7 (2004; Table 2). In 2013, 50 stock-length Walleye ranging in TL from 25 to 67 cm (9.8 to 26.4 in) were captured in the gill net catch for a mean gill net CPUE of 8.3 (Table 1; Figure 4). The 2013 gill net CPUE remained below the minimum objective (≥ 10 stock-length fish/net night), but represented an increase from the 2012 CPUE of 2.8 and suggested moderate relative abundance (Table 3).

Strong year classes (defined as > 75 age-0 Walleye/hour electrofishing) were naturally produced annually from 2003-2011 with one weak year class in 2012 (4.0 age-0 Walleye/hour; Table 2). Unfortunately, recruitment to the adult population has been limited (Table 4). Otoliths collected from Walleye in the 2013 gill net catch revealed the presence of five year-classes (2001, 2008-2011; Table 4). In 2013, the mean fall night electrofishing CPUE of age-0 Walleye was 286.0 (Tables 1, 2) suggesting that a strong cohort was produced; however, recruitment is currently unknown and will be assessed in future surveys.

Fry stocked in 2013 were marked with oxytetracycline (OTC) to determine stocking contribution. Among age-0 Walleye sampled, 41 of 51 exhibited marks for an estimated 80% stocking contribution (Table 4). The high proportion of stocking contribution is unexpected as natural reproduction has produced many strong year-classes from 2004-2011 (Table 2). The Walleye population in Roy Lake has been predominantly self-sustaining, at a low level, as stocking has occurred twice since 2000 (2003, 2013; Tables 4, 6).

Walleye in Roy Lake typically reach quality-length and the minimum length limit 38 cm (15 in) at approximately age-3 (Table 5). Since 2005, the weighted mean TL at capture of age-3 walleye has ranged from 334 to 438 mm (13.1 to 17.2 in); while the weighted mean TL at capture of age-4 walleye has ranged from 408 to 530 mm (16.1 to

20.9 in; Table 5). However, due to low sample sizes weighted mean TL at capture values may at times represent a single walleye (Table 5).

Condition of Walleye captured in 2013 was good with mean Wr values ranging from 88 to 92 for all length categories (e.g., stock to quality) sampled. The mean Wr for all stock-length Walleye was 91 (Table 1). No length-related trend in Wr was observed.

Yellow Perch: The mean gill net CPUE of stock-length Yellow Perch was 82.2 (Table 1) and above the minimum objective ($\geq$ 30 stock-length Yellow Perch/net night; Table 3). Since 2004, mean gill net CPUE values have fluctuated from a low of 14.7 (2009) to a high of 99.8 (2006; Table 2). Based on the 2013 gill net CPUE, relative abundance appears to be high.

Gill net captured Yellow Perch ranged in TL from 8 to 24 cm (3.1 to 9.4 in; Figure 5). The majority of Yellow Perch in the gill net catch were $\leq$ quality-length (20 cm; 8 in) as indicated by the low PSD and PSD-P values of 13 and 0, respectively (Tables 1, 3; Figure 5). Both the PSD and PSD-P were below management objectives of 30-60 and 5-10 (Table 3).

Otoliths collected from a sub-sample of gill net captured Yellow Perch indicated that six year classes (2007-2012) comprised the entire sample (Table 7). The 2009, 2010 and 2012 year-classes were the most represented and comprised 15%, 24% and 53% of Yellow Perch in the gill net catch, respectively (Table 7). The weighted mean TL at capture for age-2, age-3, and age-4 male Yellow Perch was 133, 157, and 176 mm (5.2, 6.2, and 6.9 in); while the weighted mean TL at capture for age-2, age-3, and age-4 female Yellow Perch was 143, 176, and 203 mm (5.6, 6.9, and 8.0 in; Table 8). The majority (87%) of stock-length Yellow Perch in the gill net catch were within the stock-quality length category, which had a mean Wr of 92. A slight decreasing trend in Wr was observed as total length increased.

Other Species

Black Bullhead: The mean frame net CPUE of stock-length Black Bullhead was 6.5 (Table 1) and within the objective ($\leq$ 100 stock-length Black Bullhead/net night; Table 3). Since 2004, the mean frame net CPUE has ranged from a low of 0.5 (2009, 2010) to a high of 39.7 (2004; Table 2). Currently, relative abundance is considered low to moderate in Roy Lake and their impact on the sport fishery is likely minimal.

Black Crappie: Black Crappie relative abundance was low from 2001-2005, but increased in 2006, as Black Crappie from year classes produced in 2004 and 2005 recruited to our gear (Table 2). However, relative abundance quickly declined and has remained low from 2007-2013 (Table 2). The 2013 mean frame net CPUE was 0.6 (Table 1). Sampled Black Crappie ranged in TL from 10 to 28 cm (3.9 to 11.0 in). Few inferences can be made concerning size structure or condition due to low sample size.

Bluegill: The mean frame net CPUE of stock-length Bluegill was 8.0 (Table 1). Since 2004, the frame net mean CPUE has ranged from a low of 0.5 (2004) to a high of

63.0 (2006; Table 2). Based on the 2013 frame net CPUE, relative abundance appears to be moderate.

Frame net captured Bluegill ranged in TL from 8 to 23 cm (3.1 to 9.1 in), had a PSD of 55 and a PSD-P of 2 (Table 1; Figure 6). Otoliths were collected from a sub-sample of frame net captured Bluegill and suggested the presence of five consecutive year classes (2008-2012; Table 9). The 2010 and 2011 cohorts were the most represented and comprised 52% and 44% of Bluegill in the frame net catch, respectively (Table 9).

Bluegills in Roy Lake typically reach quality-length (15 cm; 6 in) at age-3 (Table 12). Since 2007, the weighted mean TL at capture of age-3 Bluegill has ranged from 146 to 189 mm (5.7 to 7.4 in; Table 10). The condition of sampled Bluegill was high, with Wr values that were $\geq$ 109 for all length categories (e.g., stock to quality) sampled. The mean Wr of stock-length Bluegill was 112 (Table 1) and no length-related trends in condition were apparent. Seasonal influences (i.e., spawning behavior) may have influenced Wr values.

Other: Common Carp, Green Sunfish and White Sucker were other fish species captured in low numbers during the 2013 survey (Table 1).

Management Recommendations

1) Conduct fish community assessment surveys utilizing frame nets and gill nets on an annual basis (next survey scheduled in summer 2014) to monitor fish relative abundance, fish population size structures, and fish growth.

2) Conduct spring night electrofishing on a biennial basis (even years) to monitor Largemouth Bass and Smallmouth Bass population parameters.

3) Conduct fall night electrofishing on an annual basis to monitor age-0 Walleye relative abundance.

4) Collect otoliths from Bluegill, Walleye and Yellow Perch; scales from Largemouth and Smallmouth bass to assess age structure and growth rates of each population.

5) Stock Walleye (≈25 large fingerlings/acre) to establish additional year classes if the fall night electrofishing CPUE of young-of-the-year Walleye and gill netting results warrant [i.e., low gill net CPUE of sub-stock (< 25 cm; 10 in) Walleye and/or fall night electrofishing CPUE of age-0 Walleye < 75 fish/hour].

6) Maintain the 356-457 mm (14-18 in) protected slot length limit on Largemouth and Smallmouth Bass. The regulation is designed to increase the average size of black bass while allowing harvest of small bass to avoid slowing of growth (Blackwell and Lucchesi 2009).

7) Maintain the 381-mm (15 in) minimum length limit on Walleye. The regulation is designed to protect smaller fish from harvest and increase average fish size (Lucchesi and Blackwell 2009).

8) Partner with willing landowners on shoreline restoration projects designed to restore native plant fauna along highly-developed shorelines providing improvements to water quality and littoral habitats within the lake.

Table 1. Mean catch rate (CPUE; gill/frame net = catch/net night, electrofishing = catch/hour) of stock-length fish, proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish, and mean relative weight (Wr) of stock-length fish for various fish species captured in frame nets, experimental gill nets, and electrofishing in Roy Lake, 2013. Confidence intervals include 80 percent (± CI-80) or 90 percent (± CI-90). BLB= Black Bullhead; BLC= Black Crappie; BLG= Bluegill; COC= Common Carp; GSF= Green Sunfish; NOP= Northern Pike; SMB= Smallmouth Bass; WAE= Walleye; WHS= White Sucker; YEP= Yellow Perch

Species	Abundance		Stock Density Indices				Condition	
	CPUE	CI-80	PSD	CI-90	PSD-P	CI-90	Wr	CI-90
Frame nets								
BLB	6.5	2.3	68	6	15	5	81	<1
BLC	0.6	0.3	50	25	14	17	105	3
BLG	8.0	2.9	55	6	2	2	112	<1
COC	0.1	0.1	100	0	100	0	92	41
GSF	0.2	0.1	100	0	0	---	108	13
NOP	1.2	0.4	38	16	0	---	89	2
SMB	0.2	0.1	25	59	0	---	97	5
WAE	0.2	0.1	40	52	20	43	86	10
WHS	0.1	0.1	100	0	100	0	90	<1
YEP	9.8	0.3	22	5	0	1	85	1
Gill nets								
BLB	1.2	1.1	71	35	0	---	93	7
BLG	0.3	0.5	0	---	0	---	135	<1
NOP	7.5	2.4	51	13	0	---	88	1
SMB	2.3	1.2	86	17	50	25	103	2
WAE	8.3	3.1	36	11	14	8	91	1
WHS	4.7	2.1	86	12	75	14	98	3
YEP	82.2	36.8	13	3	0	---	91	1
Electrofishing								
WAE[1]	286.0	---	---	---	---	---	---	---

[1] Fall Electrofishing-WAE; catch rate (CPUE) represents age-0 Walleye/hour

Table 2. Historic mean catch rate (CPUE; gill/frame net = catch/net night, electrofishing = catch/hour) of stock-length fish for various fish species captured using frame nets, experimental gill nets, and electrofishing in Roy Lake, 2004-2013. BLB= Black Bullhead; BLC= Black Crappie; BLG= Bluegill; HYB= Hybrid Sunfish; COC= Common Carp; GSF= Green Sunfish; LMB= Largemouth Bass; NOP= Northern Pike; SMB= Smallmouth Bass; WAE= Walleye; WHS= White Sucker; YEP= Yellow Perch

Species	CPUE									
	2004	2005	2006[5]	2007[5]	2008	2009	2010	2011	2012	2013
Frame nets										
BLB	39.7	5.0	2.0	3.7	1.5	0.5	0.5	0.6	8.2	6.5
BLC	0.2	0.3	8.9	2.9	0.3	0.0	0.2	0.5	0.6	0.6
BLG	0.5	7.4	63.0	24.2	32.4	16.8	8.2	7.2	12.9	8.0
HYB[1]	0.0	0.0	0.0	0.4	0.0	0.2	<0.1	0.5	0.0	0.1
COC	0.0	0.3	0.1	0.3	0.3	0.0	0.1	<0.1	0.1	0.1
GSF	0.0	0.0	1.3	0.0	0.7	0.7	0.1	0.0	0.7	0.2
LMB	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOP	0.4	1.0	1.0	0.6	1.0	0.8	0.5	0.5	1.5	1.2
SMB	0.6	1.0	1.5	0.5	0.5	0.3	0.5	0.8	0.3	0.2
WAE	0.9	0.4	0.5	0.5	1.0	0.5	0.3	0.1	0.5	0.2
WHS	0.5	< 0.1	0.2	0.3	0.2	0.3	<0.1	<0.1	<0.1	0.1
YEP	1.7	5.6	31.6	26.0	5.5	6.8	20.9	19.6	21.3	9.8
Gill nets										
BLB	32.2	0.3	1.3	1.8	0.2	0.0	0.0	0.0	4.3	1.2
BLC	0.3	0.3	2.5	1.7	0.0	0.2	0.2	0.0	0.2	0.0
BLG	0.2	0.0	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.3
COC	0.7	0.2	0.7	2.0	0.3	0.3	0.7	0.3	0.0	0.0
NOP	1.8	2.0	5.0	1.5	3.7	1.5	2.7	7.8	10.3	7.5
SMB	0.3	1.2	0.8	2.5	0.2	0.3	0.8	0.2	0.5	2.3
WAE	9.7	4.7	6.3	4.0	2.8	3.0	3.3	1.8	2.8	8.3
WHS	1.2	2.5	1.7	2.5	2.2	6.2	4.7	7.2	6.7	4.7
YEP	24.5	91.3	99.8	63.7	15.3	14.7	51.0	80.3	99.3	82.2
Electrofishing										
LMB[2]	---	---	---	---	22.5	18.7	26.3	---	36.6	---
SMB[3]	---	---	---	---	---	17.3	42.4	---	110.8	---
WAE[4]	420.9	104.5	81.6	275.7	235.0	285.7	153.0	466.5	4.0	286.0

[1] All fish sizes
[2] Spring Electrofishing-LMB
[3] Spring Electrofishing-SMB
[4] Fall Electrofishing-WAE; catch rate (CPUE) represents age-0 Walleye/hour
[5] Monofilament gill net mesh size (0.75", 1.00", 1.25", 1.50", 2.00" and 2.50")

Table 3. Mean catch rate (CPUE; gill/frame net = catch/net night, electrofishing = catch/hour) of stock-length fish, proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish, and relative weight (Wr) for selected species captured in frame nets, experimental gill nets, and electrofishing in Roy Lake, 2004-2013. BLB= Black Bullhead; LMB= Largemouth Bass; NOP= Northern Pike; SMB= Smallmouth Bass; WAE= Walleye; YEP= Yellow Perch

Species	2004	2005	2006[3]	2007[3]	2008	2009	2010	2011	2012	2013	Objective
Frame nets											
BLB											
CPUE	40	5	2	4	2	1	1	1	8	7	≤ 100
PSD	38	99	75	66	91	92	100	67	42	68	---
PSD-P	11	68	48	22	63	85	100	27	8	15	---
Wr	93	96	87	90	91	104	102	91	90	81	---
Gill nets											
NOP											
CPUE	2	2	5	2	4	2	3	8	10	8	≥ 3
PSD	100	100	77	67	68	100	81	66	65	51	30-60
PSD-P	9	17	3	11	0	11	19	15	5	0	5-10
Wr	85	86	91	91	93	87	93	90	90	88	---
WAE											
CPUE	10	5	6	4	3	3	3	2	3	8	≥ 10
PSD	57	82	68	71	65	83	45	64	41	36	30-60
PSD-P	16	25	50	25	35	39	10	27	41	14	5-10
Wr	91	93	90	90	91	87	87	94	86	91	---
YEP											
CPUE	25	91	100	64	15	15	51	80	99	82	≥ 30
PSD	6	1	6	8	1	1	0	0	7	13	30-60
PSD-P	0	0	0	0	0	0	0	0	0	0	5-10
Wr	116	104	101	100	100	101	99	102	100	91	---
Electrofishing											
LMB [1]											
CPUE	---	---	---	---	23	19	26	---	37	---	≥ 10
PSD	---	---	---	---	83	100	96	---	84	---	40-70
PSD-P	---	---	---	---	26	85	78	---	65	---	10-40
Wr	---	---	---	---	110	110	109	---	124	---	---
SMB [2]											
CPUE	---	---	---	---	---	17.3	42	---	111	---	---
PSD	---	---	---	---	---	78	70	---	25	---	40-70
PSD-P	---	---	---	---	---	72	58	---	11	---	10-40
Wr	---	---	---	---	---	89	111	---	97	---	---

[1] Spring night electrofishing-LMB.
[2] Spring night electrofishing-SMB.
[3] Monofilament gill net mesh size (0.75", 1.00", 1.25", 1.50", 2.00" and 2.50")

Table 4. Year class distribution based on the expanded age/length summary for Walleye sampled in gill nets and associated stocking history (# stocked x 1,000) from Roy Lake, 2009-2013.

Survey Year	Year Class 2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
2013[1]			21	15	6	3							1	
2012[1]	---		6	2	8	1								1
2011[1]	---	---		4	5	1	2	1		1				
2010	---	---	---		3	12	1	2	3	2			1	
2009[1]	---	---	---	---		4	2	5	2	2	1	1	3	
# stocked														
fry	850[2]													
sm. fingerling											209			
lg. fingerling														

[1] Older walleye were sampled, but are not reported in this table

[2] Stocked Walleye were OTC marked; 41 of 51 otoliths collected from fall electrofished age-0 walleye exhibited marks for an estimated stocking contribution of 80%.

Table 5. Weighted mean TL at capture (mm) for Walleye age-1 through age-10 sampled in experimental gill nets (expanded sample size) from Roy Lake, 2005-2013. Note: sampling was conducted at approximately the same time during each year allowing comparisons among years to monitor growth trends.

Year	Age 1	2	3	4	5	6	7	8	9	10
2013[1]	---	300(21)	367(15)	424(6)	535(3)	---	---	---	---	---
2012[1]	197(6)	294(2)	351(8)	530(1)	---	---	---	---	---	---
2011[1]	183(4)	276(5)	398(1)	483(2)	467(1)	---	513(1)	---	---	---
2010	177(3)	294(12)	384(1)	464(2)	522(3)	473(2)	---	---	485(1)	---
2009[1]	194(4)	301(2)	398(5)	465(2)	502(2)	506(1)	561(1)	570(3)	---	---
2008[1]	262(1)	324(4)	438(1)	408(5)	557(1)	---	---	---	626(1)	---
2007	210(8)	327(6)	423(7)	466(3)	538(1)	504(1)	---	535(1)	641(1)	---
2006[1]	168(1)	223(4)	334(11)	445(2)	510(8)	527(3)	558(2)	---	580(3)	---
2005[1]	183(2)	301(3)	396(5)	447(10)	471(1)	---	524(1)	553(2)	530(1)	---

[1] Older Walleye were sampled, but are not reported in this table.

Table 6. Stocking history including size and number for fishes stocked into Roy Lake, 2000-2013. LMB= Largemouth Bass; WAE= Walleye

Year	Species	Size	Number
2003	LMB	fingerling	4,200
2003	WAE	small fingerling	208,600
2013	WAE	fry	850,000

Table 7. Year class distribution based on the age/length summary for Yellow Perch sampled in gill nets from Roy Lake, 2009-2013.

	Year Class								
Survey Year	2013	2012	2011	2010	2009	2008	2007	2006	2005
2013		563	44	258	163	32	8		
2012	---		45	412	105	80			
2011	---	---		764	548	194			
2010	---	---	---		208	926	44		
2009	---	---	---	---		138	361	5	2

Table 8. Weighted mean TL (mm) at capture by gender for Yellow Perch captured in experimental gill nets (expanded sample size) from Roy Lake, 2009-2013.

	Age					
Year	1	2	3	4	5	6
2013						
Male	98(127)	133(14)	157(105)	176(101)	188(12)	193(4)
Female	100(361)	143(18)	176(161)	203(68)	217(13)	241(2)
Combined	100(563)	138(44)	168(258)	188(163)	202(32)	205(8)
2012						
Male	105(18)	146(130)	173(27)	184(23)	---	---
Female	100(22)	153(270)	191(85)	211(33)	---	---
Combined	102(45)	150(412)	184(105)	196(80)	---	---
2011						
Male	96(151)	124(80)	155(39)	---	---	---
Female	100(288)	135(316)	166(93)	---	---	---
Combined	99(764)	128(548)	157(194)	---	---	---
2010						
Male	96(66)	114(275)	143(4)	---	---	---
Female	96(123)	126(611)	169(29)	---	---	---
Combined	96(208)	122(926)	158(44)	---	---	---
2009						
Male	90(45)	108(131)	164(1)	---	---	---
Female	95(86)	121(218)	179(4)	193 (2)	---	---
Combined	93(138)	116(361)	176(5)	193 (2)	---	---

Table 9. Year class distribution based on the expanded age/length summary for Bluegill sampled in frame nets from Roy Lake, 2008-2013.

	Year Class									
Survey Year	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
2013		5	84	100	1	1				
2012	---		32	260	5	4	4	4	1	
2011	---	---		37	26	66	35	11		
2010	---	---	---			62	106	29		
2009	---	---	---	---		19	338	41	7	
2008	---	---	---	---	---		443	221	104	3

Table 10. Weighted mean TL (mm) at capture for Bluegill sampled in frame nets (expanded sample size) from Roy Lake, 2007-2013.

Year	Age						
	1	2	3	4	5	6	7
2013	93(5)	133(84)	176(100)	218(1)	236(1)		
2012	89(32)	138(260)	189(5)	203(4)	219(4)	228(4)	247(1)
2011	83(37)	119(26)	151(66)	179(35)	202(11)	---	---
2010	---	101(62)	146(106)	165(29)	---	---	---
2009	81(19)	106(338)	150(41)	183(7)	---	---	---
2008	104(443)	115(221)	150(104)	177(3)	---	---	---
2007	83(6)	123(527)	158(52)	218(1)	234(1)	---	---
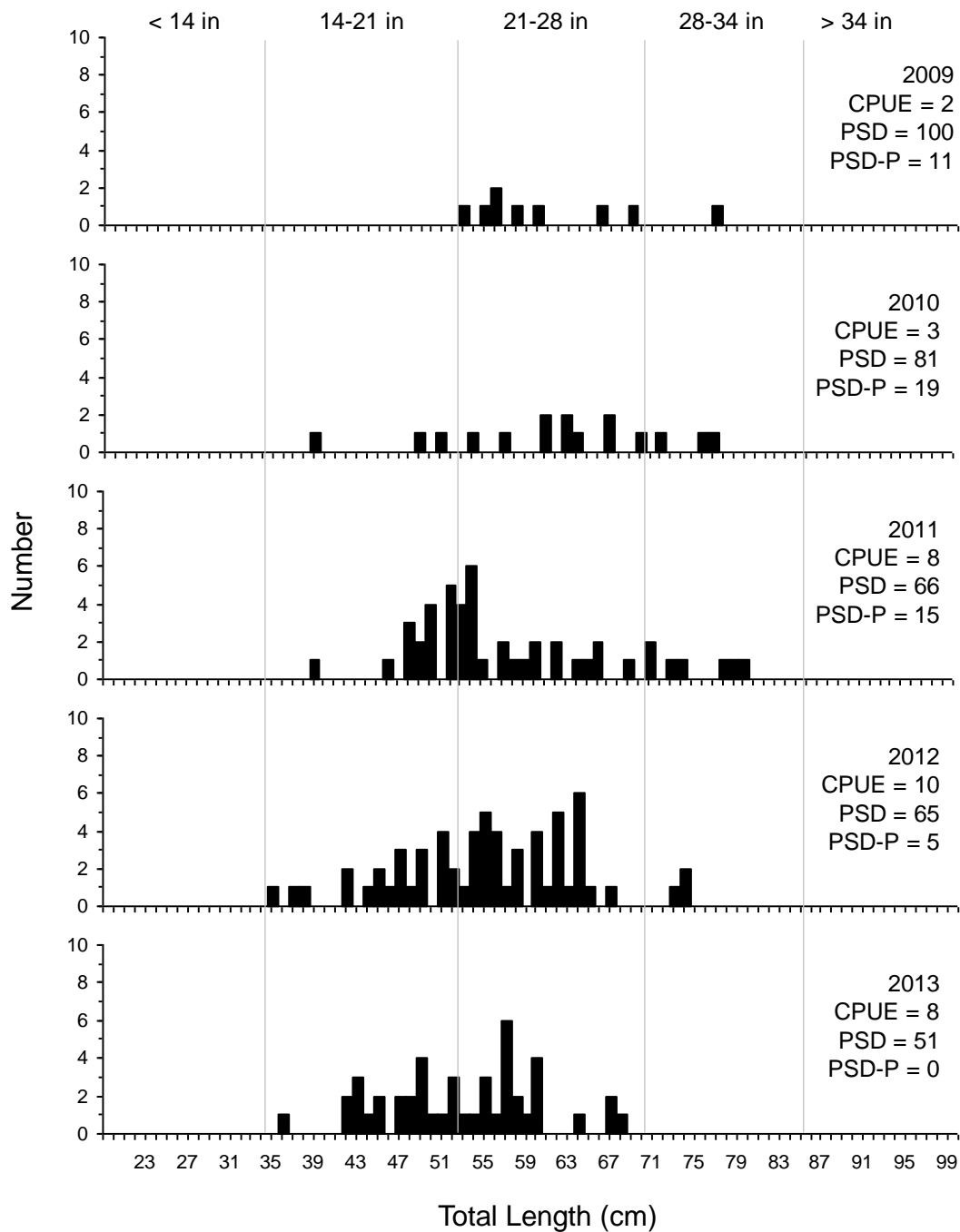
Roy Lake

Figure 3. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for Northern Pike captured using gill nets in Roy Lake, 2009-2013.
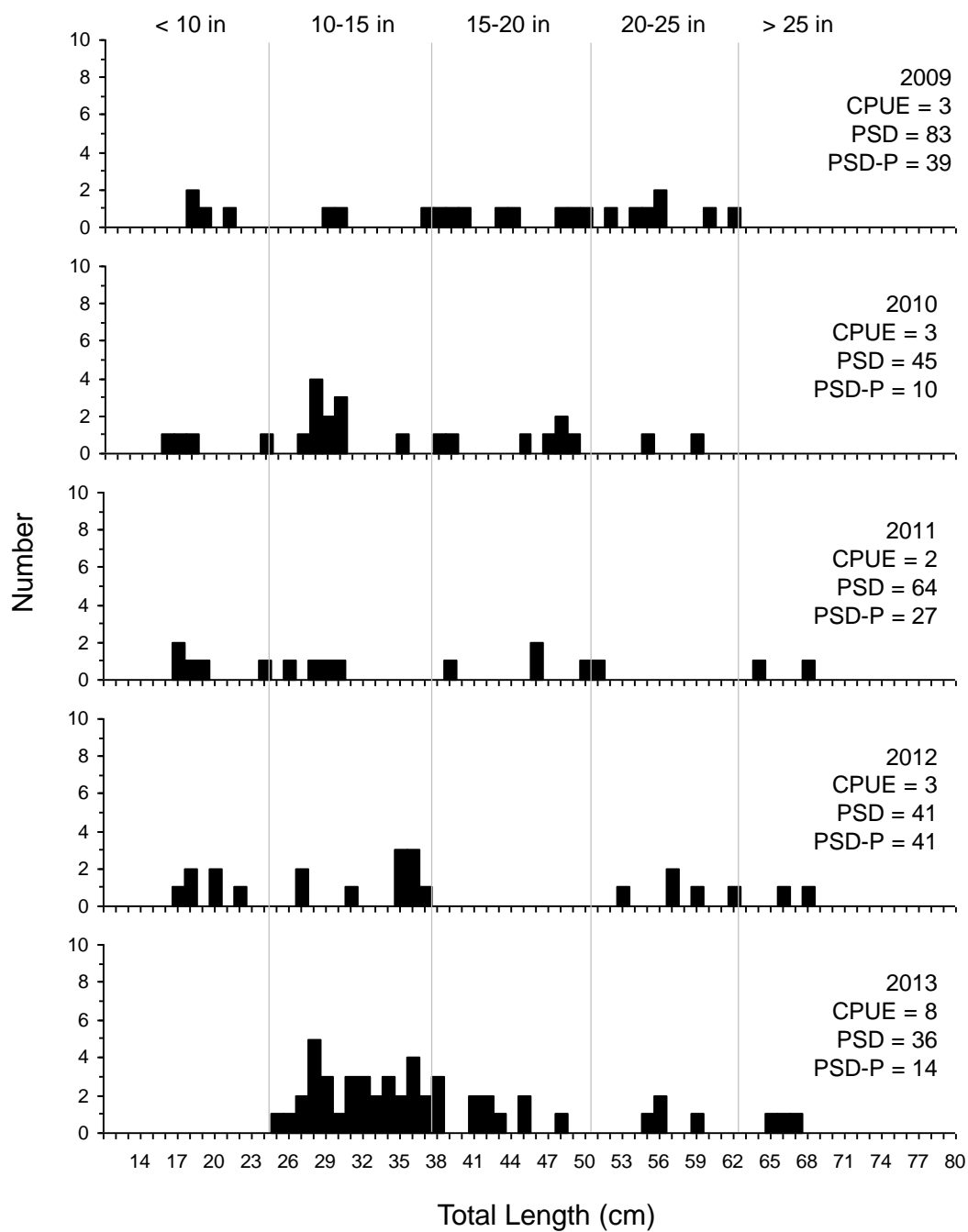
Figure 4. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for Walleye captured using gill nets in Roy Lake, 2009-2013.
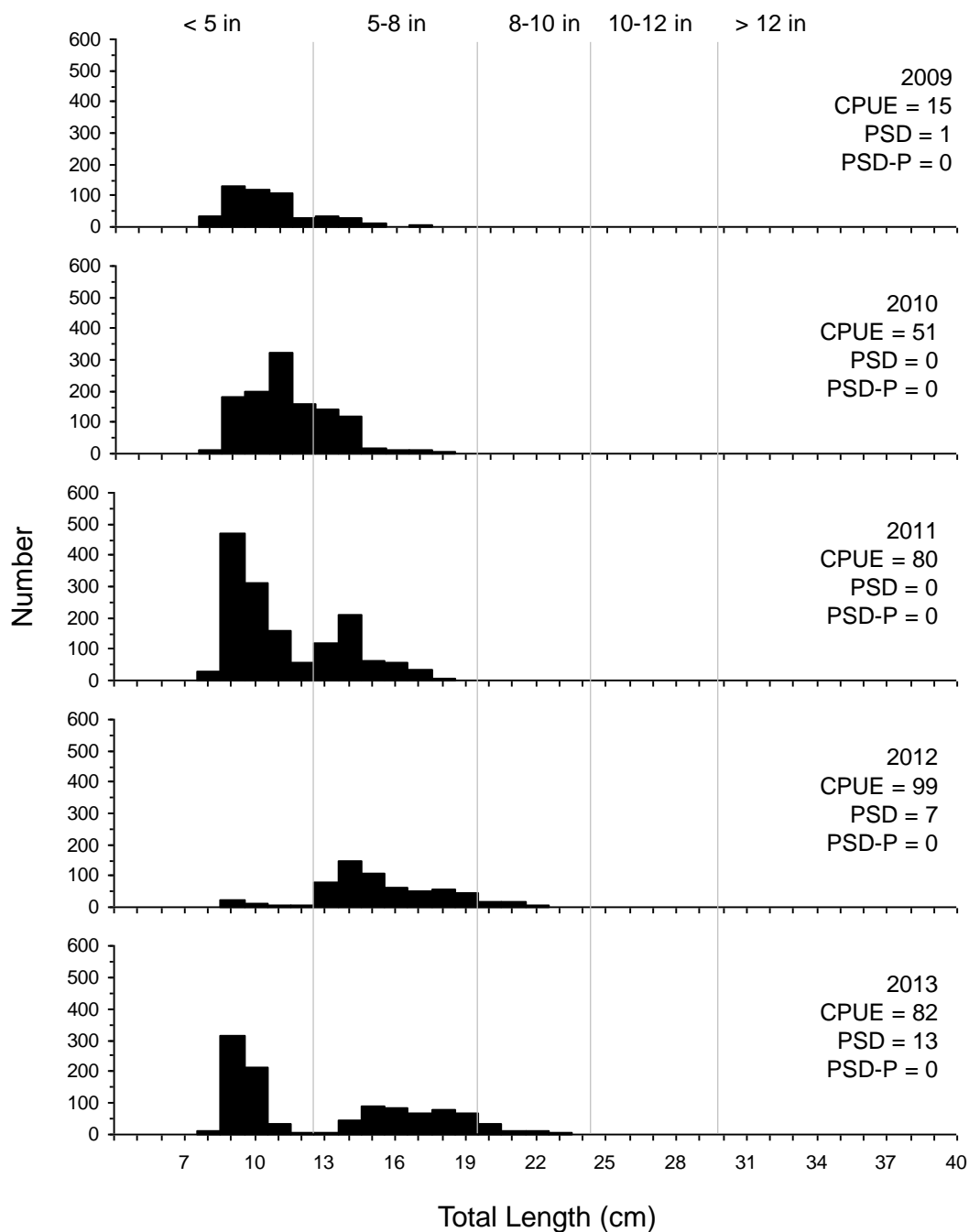
Figure 5. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for Yellow Perch captured using gill nets in Roy Lake, 2009-2013.
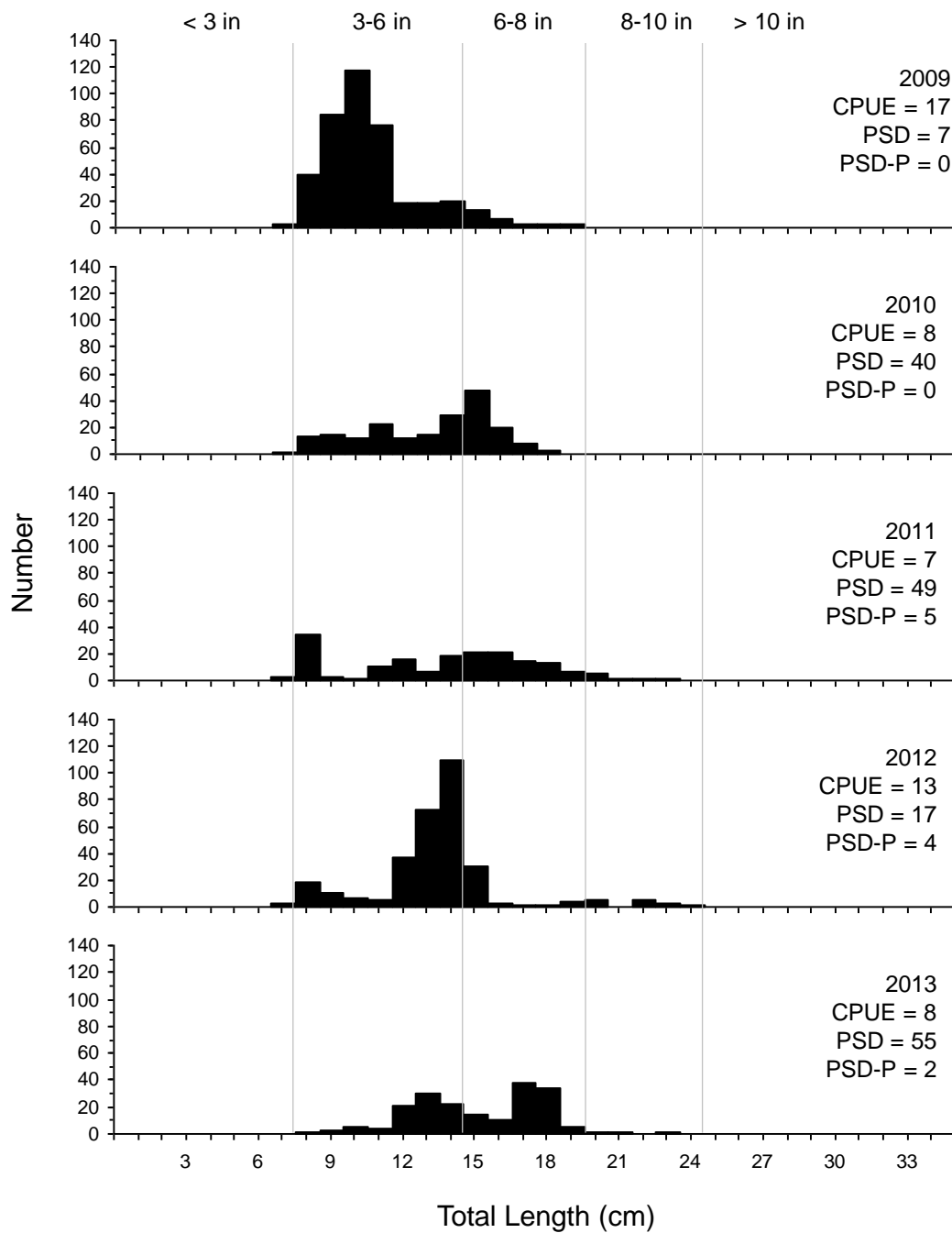
Figure 6. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for Bluegill captured using frame nets in Roy Lake, 2009-2013.